

HEROES AND MARTYRS OF QUALITY AND SAFETY

Joseph Juran: overcoming resistance to organisational change

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Dr Joseph Juran is well known to most quality scholars. With a productive career spanning over three quarters of a century, his leadership and service in the field of quality management is measured in decades, not years. He has taught or consulted in at least 34 countries. He has written or contributed to hundreds of papers, speeches and dozens of books. His books have been translated into 12 or more languages. Among other things, he has pushed the concepts of the Pareto principle and Juran trilogy, and has increased the role of the human dimension in quality.¹

Juran currently lives with his wife in Rye, New York, USA. He was born in Braila, Romania on 24 December 1904. His father was a shoemaker. At the age of 8 years, he and his family moved to Minneapolis, USA. The relocation was motivated by a desire to escape poverty and anti-Semitism. His mother died from tuberculosis about 8 years later. As a child and young adult, Juran was no stranger to hard work, and he reported that he had about 16 jobs, including selling newspapers, being a grocery store clerk, book-keeping and being a janitor, in the 12 years that he lived in Minneapolis. He learnt from all his work experiences, but he also pursued a formal education in addition to his demanding work schedule.^{1,2} In 1924, he obtained a degree in electrical engineering from the University of Minnesota. He married Sadie Shapiro in 1926. He later went on to obtain a law degree from Loyola University in 1936, perhaps motivated by the economic uncertainty of the Depression.

With a starting salary of \$27/week, Joseph Juran worked at the Western Electric Hawthorne plant in Cicero, Illinois, USA, from 1924 to 1941. There, he was influenced by Walter A Shewhart. Juran, Walter A Shewhart³ and W Edwards Deming⁴ are considered to be the three key founders of the quality improvement movement. From 1924 to 1933, the Hawthorne plant was a remarkable place for its unique role in advancing the science of quality improvement, and for the studies by Elton Mayo on worker productivity.

Juran's career went from one highpoint to the next. During World War II, from 1941 to 1945 he was assistant administrator at the Lend Lease Administration for the US government. He taught industrial engineering as a professor and was department chairman at New York University from 1945 to 1951. In 1979 Juran created the Juran Institute, and in 1983 the Juran Foundation. Juran was active in creating, and is active in supporting the Malcolm Baldrige National Quality Award, both directly as an individual and through the Juran Foundation. In 1997, the Juran Foundation was renamed the Juran Center for Leadership in Quality after being transferred to the University of Minnesota, Carlson School of Management.

Juran's first publication was in 1923. It was a newspaper article on the game of chess. He is passionate about writing and went on to publish hundreds of articles and papers, and more than 30 books. Three of his books that have had an

international impact are *Juran's quality handbook*, *Managerial breakthrough* and *Juran on quality by design*.^{6–8}

Juran contributed greatly to the human dimension of management. Other contributions that will be recognisable to most quality scholars include the Pareto Chart and the Juran Trilogy.

PARETO CHART

The Pareto Chart is named after the 19th century Italian economist, Vilfredo Pareto. Pareto stated that 80% of the wealth of the country was held by approximately 20% of the population.

In 1937, Joseph Juran stated that this principle also applied to defects, so that 80% of the problems are caused by 20% of the defects, which meant that if you focused on that 20%, you could have a big effect with minimal effort. Juran called this the Pareto Principle.

The Pareto Chart is basically a bar chart in which the bars are sorted so that the highest bar (highest count of defects) is on the left, the second highest bar is next, and so on, with the shortest bar on the far right. The chart is used to prioritise problems or processes that require an input of resources to improve. It separates the "vital few" from the "useful many". Figure 1 shows an example of a Pareto analysis from a 23-item survey on patient satisfaction. Six items were found to be non-contributing factors; therefore, only 17 items are displayed in the Pareto diagram.⁹

Pareto charts often include a cumulative percentage line, which starts with the highest bar on the left and peaks to the right to show the cumulative percentage of all causes.

Juran takes on Al Capone's gang and wins

Half a block away from the Hawthorne plant in Cicero, Illinois, on 22nd Street was the headquarters of Al Capone's gang. Capone was the most famous of America's prohibition gangsters. He helped give Chicago the tough reputation it holds to this day. Juran remembered reports of rival gang members driving down 22nd Street passing the Hawthorne buildings with guns blazing as they battled for criminal supremacy. At Capone's nearby gambling establishment, "The Shop", Juran observed that one of Capone's workers was so inept and so repetitive in running the roulette wheel that Juran collected and analysed data about this dealer's behaviour and was able to win \$100 as a result. In those days \$100 was equal to several weeks of Juran's pay.⁵

One supposes that the roulette wheel was rigged so that Juran could figure out a predictable non-random pattern of results. One also supposes that Juran was wise enough not to win too much, to avoid the close attention of Capone's thugs.

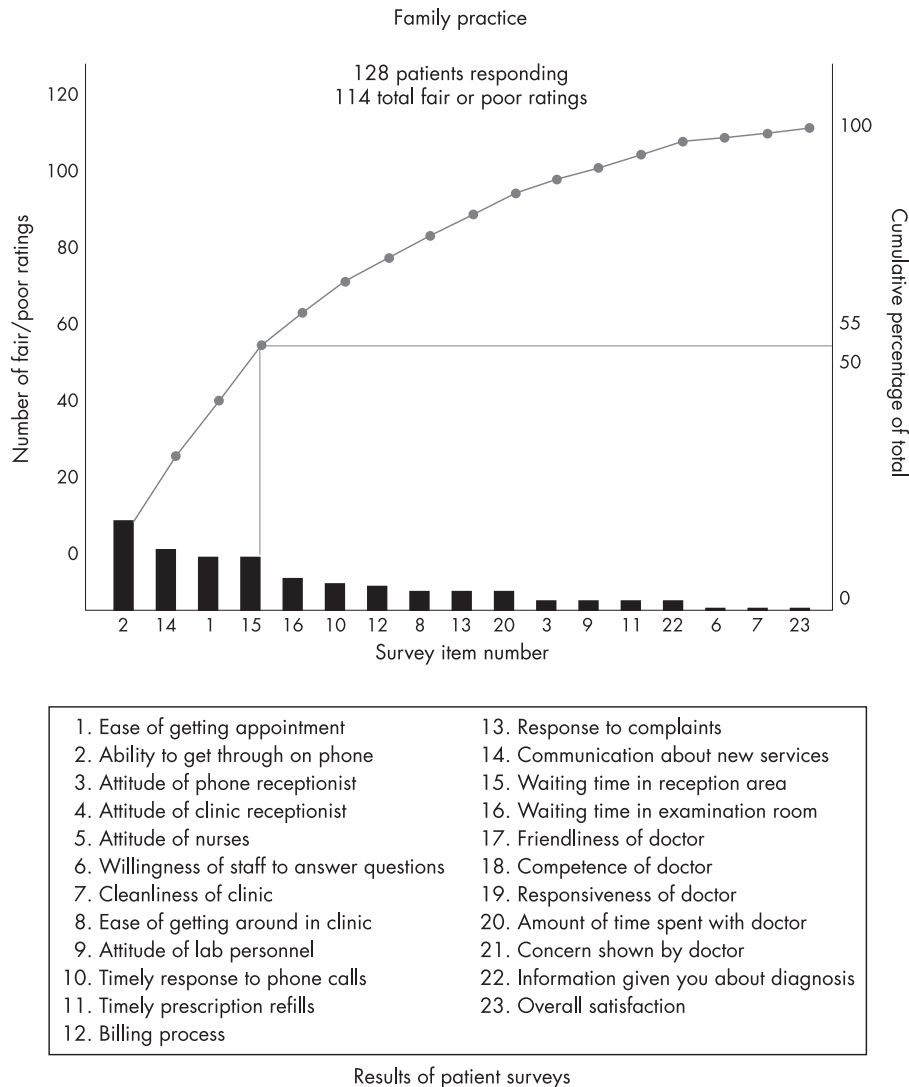


Figure 1 An example of Pareto analysis (reprinted with kind permission from Juran Institute, Inc).

JURAN'S QUALITY TRILOGY

Quality improvement professionals communicate most effectively with managers when they use the language of management and finance. In this regard, the Juran Quality Trilogy provides a frame for linking finance and management to quality improvement.

The three trilogy components¹⁰ are

- Quality planning—define customers and how to meet their needs.
- Quality control—keep the process working well.
- Quality improvement—learn, optimise, refine and adapt.

Juran has been awarded four honorary doctorates and numerous honorary memberships and awards, including the Order of Sacred Treasure from Japan. Juran taught his managing for quality courses in 40 countries, with a total of over 100 000 people in attendance.¹¹ Don Berwick has said “Within the quality field, Dr Juran’s depth of work is remarkable. He didn’t just combine the science of quality with its practical aspects; he welded them together. His work is deeply scientific and deeply pragmatic, which is unique.”¹² The pragmatic aspect of Dr Juran’s work is his ability to implement and manage changes that lead to improved quality.

IMPLEMENTATION

Whatever advances American manufacturing has made in the last thirty to forty years, we owe to Joe Juran and to his untiring, steady, patient, self-effacing work.¹³ (Drucker)

The human dimension that leads to organisational inertia is a major obstacle for quality improvement. Juran gained a remarkable insight when he read Mead’s *Cultural patterns and technical change*¹⁴ in 1956. It appears to have opened his thinking to new strategies for addressing the organisational inertia that may reside in organisational culture. He then saw this common barrier to change as cultural resistance. This insight into the root cause of organisational resistance proved valuable in implementing changes leading to quality improvement. Change takes place in the context of the culture. The change has to be tailored to the values, norms and customs of the organisation. In healthcare today, we integrate the art of applying the knowledge of cultural anthropology and psychology with human factors science and biostatistics to improve quality and patient safety. Juran stated in his memoirs: “To those whose careers are in the field of managing for quality, thank your lucky stars. Your field will grow extensively during your lifetime, especially in

Customer-mindedness, statistical-mindedness and organisational transformation

- Customer-mindedness (who do we serve?) requires quality planning.
- Statistical-mindedness (how do we know that we are meeting the needs of the people we serve?) uses quality control.
- Organisational transformation (how do we change to better meet these needs?) requires quality improvement.

These three concepts, customer-mindedness, statistical-mindedness and organisational transformation, have been organising principles of this "Heroes and Martyrs" series. These three concepts have much in common with the Juran Trilogy.

Juran, the historian of quality management

Juran edited and coauthored *A history of managing for quality* (1995). There are chapters on the early history of managing for quality from ancient China, Israel, Greece, India, Rome, Scandinavia and from modern Japan, England and the USA. Other chapters include the Venetian Arsenal, French cathedrals and arms, Czech beer making and mining, and making accurate clocks.

This 688-page tome has many historic photographs that will be of interest to quality scholars. One photograph is of an Egyptian stonecutter and an inspector with a measuring string checking on the cutter's work for quality. This picture dates from 3500 years ago and became part of the symbol of the Juran Institute.¹² There is another picture of a 2000-year-old stone carving from China, which shows the two mythical ancestors of humanity: Fuxi and Nuioa. They have human torsos and eel-like tails (perhaps the ancient Chinese believed in evolution). Fuxi holds a carpenter's square used to measure a right angle accurately. The myth is that Fuxi invented the yardstick (Juran,¹² p7).

three of our giant industries—health, education and government. There will be exciting opportunities for innovation and service to society."²

In the simplest of terms, Juran defines quality as "fitness for use". Overcoming cultural resistance in organisations is key to making quality management philosophy and principles fit for use by allowing implementation and practice. As of this writing, Joseph Juran is over 100 years old and has lived long enough to see his ideas accepted.

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